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EXAMINER

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Please find below and/or attached an Office communication concerning this application or proceeding.

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/734,054
Filing Date: December 10, 2003
Appellant(s): JERG ET AL.

Russell W. Warnock
BSH Bosch und Siemens Hausgeraete GmbH
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 01/30/2008 appealing from the Office action mailed 03/30/2007.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

5,946,180	Simpson	8-1999
6,046,441	Daffron	4-2000
5,943,199	Aromin	8-1999
5,604,387	Cheyne	2-1997
6,603,221	Liu	8-2003
3,973,192	Justi et al.	8-1976
1,979,976	Marshall	11-1934

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 11-12 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Simpson (US 5,946,180) in view of Daffron (US 6,046,441).

Regarding claim 11, Simpson discloses a fire protection device for domestic appliances, comprising: at least one fault current circuit breaker (32, 34, 68, 42) coupled to the input electrical supply (62) of at least one conductor (12a, 14a) of a domestic appliance, which fault current circuit breaker (32, 34, 68, 42) disconnects said electrical supply (62) from said appliance when said fault current circuit breaker (32, 34, 68, 42) senses a fault current in said at least one conductor (12a, 14a). Fault current circuit breaker (32, 34, 68, 42) comprises a primary transformer (32) and secondary winding (34) for sensing a load current, comparison and activation circuitry (68), and a power disconnect relay (42) that can be reset. Circuitry (68) causes relay (42) to disconnect, thus breaking the circuit, between conductors (12a, 14a) and the power in the electrical supply outlet (62) when current sensing means (32, 34) detects an overload fault current. See abstract; Figs. 2-7; column 8, lines 36-39 and 49-67; column 12 lines 48-52; and column 18, lines 7-17. Simpson does not disclose a gas sensor.

However, Daffron discloses at least one gas sensor (6, 10) coupled to sense the quantity of at least one control gas in an appliance (5), which gas sensor (6, 10) causes an electrical supply (3) to be disconnected from said appliance (5) when said gas sensor (6, 10) senses a predetermined quantity of said at least one control gas. A circuit breaker mechanism (11, 12) disconnects the appliance (5) from electrical supply

outlet (3) when at least one gas sensor (6, 10) senses a predetermined amount of carbon monoxide or carbon dioxide. See abstract; Figs. 1-3; column 2, and lines 4-9 and 15-19. Since both fault currents and gaseous combustion by-products can be an indication of the presence of a fire, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the fire protection devices of Simpson and Daffron in order to provide a fire protection device that senses both fault currents and gaseous combustion by-products, thus improving fire protection.

Regarding claim 12, Simpson discloses a plurality of conductors (12a, 14a), said fault current circuit breaker (32, 34, 68, 42) coupled to each of said conductors (12a, 14a) and a fault current detected in one of said conductors (12a, 14a) causes said fault current circuit breaker (32, 34, 68, 42) to disconnect said electrical supply (62) from said appliance by an all-pole disconnection. Power disconnect relay (42) is coupled to interrupt all line and neutral sources (36, 38) in electrical supply (62) from all conductors (12a, 14a) in the event of a sensed fault current. Thus, it is an all-pole disconnection. See column 12, lines 48-52. Daffron shows in Fig. 3 that circuit breaker mechanism (11, 12), and particularly the contactor (12) of the circuit breaker (11, 12), to be coupled to all the conductors (2) so that electrical supply (3) will be disconnected from all power lines of appliance (5) when gas sensor (6, 10) senses a predetermined amount of gas. Thus, it is an all-pole disconnection.

Regarding claim 18, the fault current circuit breaker (32, 34, 68, 42) of Simpson acts as a main switch (42) for said domestic appliance. Fault current circuit breaker (32, 34, 68, 42) connects or disconnects the main plug (10a) to or from electrical supply (62),

thus serving as a switch (42) that connects or disconnects all components of the appliance to or from electrical supply (62). See Figs. 5-7.

Regarding claims 19 and 20, Daffron discloses a plurality of gas sensors (10) to be secured within the chambers of domestic appliance (5). See Figs. 1 and 3 and column 2, lines 66-67. The reference does not specify the specific location of the interior chamber of the appliance (5) to which gas sensors (10) are secured. However, since the reference discloses a plurality of gas sensors, it is interpreted that the sensors could be secured to a variety of places in the chamber of the appliance, including the door, the floor, the ceiling, or any walls of the chamber, in order to sense gaseous combustion by-products in various locations of the chamber.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Simpson (US 5,946,180) in view of Daffron (US 6,046,441) as applied to claim 11 above, and further in view of Aromin (US 5,943,199).

Regarding claim 13, Simpson discloses that said fault current circuit breaker (32, 34, 68, 42) may be installed within the electrical supply outlet (62) or embodied in an electrical outlet adaptor (144). See Figs. 6 and 9 and column 15, lines 15-18. The reference does not disclose fault current circuit breaker (32, 34, 68, 42) to be integrated into a mains plug (10a) of said electrical supply (62) of said appliance.

However, Aromin discloses a circuit breaker (13) on a circuit board provided with circuitry (11) integrated into a mains plug. See Figs. 5 and 8. It would have been obvious to one of ordinary skill in the art at the time of the invention to integrate the

circuit breaker (32, 34, 68, 42) of Simpson into the mains plug (10a), as done by Aromin, in order to provide a single plug unit for easier use and avoid extra connections as required by an adaptor.

Claims 14-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Simpson (US 5,946,180) in view of Daffron (US 6,046,441) and Aromin (US 5,943,199) as applied to claim 13 above, and further in view of Cheyne (US 5,604,387).

Regarding claim 14, the fault current circuit breaker (32, 34, 68, 42) of Simpson is coupled to said mains plug (10a) to connect or disconnect mains plug (10a) to or from electrical supply (62), thus acting as a main switch (42) for supplying individual components of said domestic appliance. See Fig. 1. Simpson does not disclose the main switch (42) as supplying low voltage to said components.

However, Cheyne discloses the use of a low voltage switch (7) for supplying electric power at a low voltage level to a load of a household appliance from a higher voltage supply, the advantage of low voltage operation being improved safety, reduced switch and insulation costs, and reduced safety standard requirements for conventional wiring at line voltage potentials. See column 6, lines 60-66; column 7. It would have been obvious to one of ordinary skill in the art at the time of the invention to use a low voltage circuit breaker to supply low voltage to the individual components of the appliance of Simpson in order to improve safety, reduce switch and insulation costs, and avoid the need for compliance with high voltage safety standards.

Regarding claim 15, Simpson discloses current sensing means (32, 34) connected to fault current circuit breaker (32, 34, 68, 42). Daffron discloses gas sensor (6, 10) to be connected to circuit breaker (11, 12). See column 3, lines 8-10. In the combination of Simpson and Daffron, it would have been obvious to connect both the current sensing means and the gas sensor to the same circuit breaker in order to reduce components and save the space required to accommodate two separate circuit breakers.

Regarding claim 16, Daffron shows in Fig. 2 that gas sensor (6, 10) is connected to a protective conductor, which is represented by the connection drawn between gas sensor (6, 10) and the protection device connected between appliance plug (20) and electrical supply (3). The connection is a protective conductor in that it is an electrically conductive line that sends a protection signal from gas sensor (6, 10) to the protective device connected between appliance plug (20) and electrical supply (3). Daffron also discloses circuit breaker (11, 12) to be triggered at a predetermined concentration of said control gas. See abstract.

Regarding claim 17, Simpson shows in Fig. 6 that the main switch (42) is connected to a protective conductor (36, 38), the electrical connection between main switch (42) and the point of connection (18) with conductors (12a, 14a) of mains plug (10a) of the appliance. This connection is an electrically conductive connection that carries the protection signal for switching main switch (42).

Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Simpson (US 5,946,180) in view of Liu (US 6,603,221) and Daffron (US 6,046,441).

Regarding claim 21, Simpson discloses a fire protection device for domestic appliances, comprising: at least one fault current circuit breaker (32, 34, 68, 42) coupled to the input electrical supply (62) of at least one conductor (12a, 14a) of a domestic appliance, which fault current circuit breaker (32, 34, 68, 42) disconnects said electrical supply (62) from said appliance when said fault current circuit breaker (32, 34, 68, 42) senses a fault current in said at least one conductor (12a, 14a), said fault current circuit breaker including a relay (42) connected to the at least one conductor (12a, 14a), a reset channel (26, 27), and a cumulative current transformer (32, 34) operable to constantly measure the sum of all currents, said relay (42) being operable to disconnect said electrical supply (62) from said appliance. Fault current circuit breaker (32, 34, 68, 42) comprises a primary transformer (32) and secondary winding (34) for sensing a load current, comparison and activation circuitry (68), and a power disconnect relay (42) that can be reset. Circuitry (68) causes relay (42) to cause disconnection between conductors (12a, 14a) and the power in the electrical supply outlet (62) when cumulative current transformer (32, 34) and circuitry (68) detect a predetermined deviation from a predetermined current sum, which predetermined deviation is indicative of a fault current. See abstract; Figs. 2-7; column 8, lines 36-39 and 49-67; column 12 lines 48-52; and column 18, lines 7-17. Simpson does not disclose that cumulative current transformer (32, 34) is operable to send a signal to reset channel (26, 27) in the event of the detection of the fault current, as it is required that a user to manually initiate a reset

by unplugging a connector (10a) from a receptacle (16) of electrical supply (62), nor does the reference disclose a gas sensor.

However, Liu discloses a method of intelligently, or automatically, resetting a switch or relay after a power interruption in order to avoid accidents that may occur when the supply of power is resumed unexpectedly. See abstract and 1:42-47. It would have been obvious to one of ordinary skill in the art at the time of the invention to generate and send a signal to a reset channel of the relay in the event of the detection of a fault current in the fire protection device of Simpson in order to implement an automatic reset for improved safety, as disclosed by Liu. Note that, although Liu applies the automatic reset to a solid state electrical switch, it would have been obvious to one of ordinary skill in the art at the time of the invention to apply the concept of an automatic reset to a relay system in order to avoid accidents in the relay system.

Furthermore, Daffron discloses at least one gas sensor (6, 10) coupled to sense the quantity of at least one control gas in an appliance (5), which gas sensor (6, 10) causes an electrical supply (3) to be disconnected from said appliance (5) when said gas sensor (6, 10) senses a predetermined quantity of said at least one control gas. A circuit breaker mechanism (11, 12) disconnects the appliance (5) from electrical supply outlet (3) when at least one gas sensor (6, 10) senses a predetermined amount of carbon monoxide or carbon dioxide. See abstract; Figs. 1-3; column 2, and lines 4-9 and 15-19. Since both fault currents and gaseous combustion by-products can be an indication of the presence of a fire, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the fire protection device of Simpson in

view of Liu with that of Daffron in order to provide a fire protection device that senses both fault currents and gaseous combustion by-products, thus improving fire protection.

Claims 22, 23, and 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Simpson (US 5,946,180) in view of Liu (US 6,603,221) and Daffron (US 6,046,441), as applied to claim 21 above, and further in view of Justi et al. (US 3,973,192).

Regarding both claims 22 and 23, Simpson in view of Liu and Daffron discloses all the limitations of claim 21, as discussed above. Daffron does not disclose that gas sensor (6, 10) is operable to detect a non-carbonaceous byproduct of combustion.

However, Justi et al. discloses a gas sensor (1) operable to detect a non-carbonaceous byproduct of combustion of polyvinyl chloride. Gas sensor (1) is a resistance body exposed to byproducts of combustion originating at least partly from a polyvinyl chloride substance. See abstract and Fig. 1. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the gas sensor of Justi et al. in the fire protection device of Simpson in view of Liu and Daffron in order to provide protection against fires in appliances using polyvinyl chloride as insulating coverings on electric cables, as detection of combustion of the substance would provide indication of a possible fire.

Regarding claims 25 and 26, all the limitations of claims 25 and 26 are recited in claims 21 and 22 above. Therefore, claims 25 and 26 are rejected under the same reasoning as that of claims 21 and 22. See above rejections.

Regarding claim 27, claim 27 corresponds to claim 23 and is rejected under the same reasoning as that of claim 23. See above rejection.

Claims 22, 24-26 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Simpson (US 5,946,180) in view of Liu (US 6,603,221) and Daffron (US 6,046,441), as applied to claim 21 above, and further in view of Marshall (US 1,979,976).

Regarding both claims 22 and 24, Simpson in view of Liu and Daffron discloses all the limitations of claim 21, as discussed above. Daffron does not disclose that gas sensor (6, 10) is operable to detect a non-carbonaceous byproduct of combustion.

However, Marshall discloses a gas sensor operable to detect a non-carbonaceous byproduct of combustion of several forms, including chlorine, for safety purposes. See page 1, lines 1-12 and page 3, lines 42-49. It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate detection of chlorine as a non-carbonaceous byproduct of combustion, as disclosed by Marshall, in the fire protection device of Simpson in order to provide protection against hazards associated with the breathing in of poisonous gases originating from chlorine.

Regarding claims 25 and 26, all the limitations of claims 25 and 26 are recited in claims 21 and 22 above. Therefore, claims 25 and 26 are rejected under the same reasoning as that of claims 21 and 22. See above rejections.

Regarding claim 28, claim 28 corresponds to claim 24 and is rejected under the same reasoning as that of claim 24. See above rejection.

(10) Response to Argument

The Rejection of Claims 11-12 and 18-20 under 35 U.S.C. 103(a) as being Unpatentable over Simpson in view of Daffron

Appellant argues that neither Simpson nor Daffron, alone or in combination, disclose the device recited in claim 11 because Simpson provides no hint of the desirability of sensing gaseous combustion by-products and Daffron provides no hint of the desirability of a fault current circuit breaker coupled to the input electrical supply of at least one conductor of a domestic appliance. Appellant also argues that the combination of the references would still not perform the same function as the device recited in claim 11 and that Aromin and Cheyne fail to overcome the supposed deficiencies of Simpson and Daffron.

Examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, **there is motivation to combine Simpson and Daffron in the knowledge generally available to one of**

ordinary skill in the art. Both Simpson and Daffron disclose a fire protection device for a domestic appliance, that of Simpson concerning protection against fires associated with fault currents and that of Daffron concerning protection against fires associated with a predetermined quantity of combustion gases. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the fire protection methods of Simpson and Daffron simply **in order to provide protection against fires associated with both fault currents and combustion gases.** Providing protection against fires associated with both fault currents and combustion gases, rather than only one or the other, would **provide increased and improved fire protection.** Simpson and Daffron together provide each and every limitation of claim 11.

The Rejection of Claim 13 under 35 U.S.C. 103(a) as being Unpatentable over Simpson in view of Daffron, as Applied to Claim 11 above, and Further in view of Aromin

Appellant argues that Aromin is improperly combined with Simpson and Daffron because the device of Aromin is self-contained and receives no external stimulus, because such a combination would not result in the present invention, and because the device of Aromin is ineffective in the case of fire.

Examiner asserts that **the fault current circuit breaker (13) of Aromin is stimulated by a sensed system fault**, just as the circuit breaker (32, 34, 68, 42) of Simpson and the circuit breaker mechanism (11, 12) of Daffron are. Thus, the combination of the references would effectively provide a circuit breaker within a mains

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plug sensitive to fault currents and a predetermined quantity of gas. Integrating the fault current circuit breaker of Simpson in view of Daffron into a mains plug, as done by Aromin, would provide each and every limitation of claim 13. **Aromin was not relied upon for fire protection**, but simply for the teaching of integrating a circuit breaker into a mains plug.

The Rejection of Claims 14-17 under 35 U.S.C. 103(a) as being Unpatentable over Simpson in view of Daffron and Aromin, as Applied to Claim 13 above, and Further in view of Cheyne

Appellant argues the combination of Cheyne with Simpson in view of Daffron and Aromin because the field effect transistor (7) of Cheyne does not act as a main switch.

Examiner asserts that **Simpson was relied upon for a main switch (42)**, and **Cheyne was relied upon simply for low voltage operation**, the advantage being improved safety, reduced switch and insulation costs, and reduced safety standard requirements for conventional wiring at line voltage potentials. The combination of the references would involve using the main switch in the fire protection device of Simpson in view of Daffron and Aromin for low voltage operation, as disclosed by Cheyne, and would fulfill the limitations of claim 14.

The Rejection of Claim 21 under 35 U.S.C. 103(a) as being Unpatentable over Simpson in view of Liu and Daffron

Applicant reapplies the argument regarding the combination of Simpson and Daffron. Please see the above response to arguments with respect to claim 11.

Appellant also argues that Simpson does not disclose a cumulative current transformer operable to constantly measure the sum of all currents, as recited in claim 21, but rather a simple one-turn primary transformer (32) with a secondary winding (34) that measure an instantaneous load current. Appellant also argues that neither Liu nor Daffron disclose a cumulative current transformer.

Examiner asserts that Simpson does indeed disclose a cumulative current transformer (32, 34), **more specifically (32c, 34c)**, operable to constantly measure the sum of all currents, as recited in claim 21. See Fig. 6; column 11, lines 52-67; and column 12, lines 1-7, which show **the cumulative current transformer consisting of a primary transformer (32c) accompanied by secondary winding (34c) upstream of junction point (98) for measuring a total current**, in other words a sum of all currents, before the total current splits at junction point (98) into individual branches measured by primary transformers (32a, 32b) with secondary windings (34a, 34b) and is delivered to receptacles (16a, 16b). The cumulative current transformer (32c, 34c) is in **constant operation** to measure the sum of all currents.

Column 11, lines 52-55 discloses "means for monitoring load current... individually as well as **together.**" Column 12, lines 2-17 discloses that "primary transformer 32c and secondary winding 34c are positioned...so that secondary winding 34c produces a voltage signal V(load) representative of the **total load current** delivered to electrical outlet 62 via both receptacles 16a, 16b....The total load current to outlet 62

could alternatively be monitored according to the **combined** signal output of transformers 32a, 32b and secondary windings 34a, 34b, with transformer 32c and secondary winding 34c being omitted.” Column 12, lines 63-67 discloses “disconnect[ing] power to outlet 62...upon detection of an overload fault with respect to the **total detected current rating** for outlet 62.” Also see column 12, lines 39-43; column 13, lines 15-23 and 29-32; and column 14, lines 5-9 for further evidence of a cumulative current transformer in the device of Simpson.

The Rejection of Claims 22, 23 and 25-27 under 35 U.S.C. 103(a) as being Unpatentable over Simpson in view of Liu and Daffron, as Applied to Claim 21 above, and Further in view of Justi et al.

Appellant reapplies the argument with respect to independent claim 21. Please see the above response to arguments with respect to claim 21.

Appellant also argues that no matter what the disclosure of Justi et al., the combination of the references would not result in the present invention, based on previous arguments made by Appellant against the combination of Simpson and Daffron. Please see the above response to arguments regarding the combination of Simpson and Daffron with respect to claim 11.

The Rejection of Claims 22, 24-26 and 28 under 35 U.S.C. 103(a) as being Unpatentable over Simpson in view of Liu and Daffron, as Applied to Claim 21 above, and Further in view of Marshall

Appellant reapplies the argument with respect to independent claim 21. Please see the above response to arguments with respect to claim 21.

Appellant also argues that Marshall does not cure the supposed deficiencies of Simpson and Daffron. Please see the above response to arguments regarding the combination of Simpson and Daffron with respect to claim 11.

Appellant argues further that Marshall is concerned with the presence of pre-combustion gases, not gases that are the byproduct of combustion and that the combination of the references would therefore not result in the present invention.

Examiner asserts that the disclosure of Marshall includes the detection of gases that are the byproduct of combustion. See page 3, lines 33-50, in which it is discussed that “the **term ‘combustion’ also applies to...**such chemical reactions as well as the burning of substances in the air...An example [being] **the chemical union of hydrogen and chlorine**, a reaction which involves heat and resembles the burning of hydrogen in oxygen.” Applying the detection of the hydrogen reacting with chlorine for safety purposes, as disclosed by Marshall, in the fire protection device of Simpson in view of Liu and Daffron **would provide the capability of detecting chlorine as a non-carbonaceous byproduct of combustion.**

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

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For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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/Michael J Sherry/

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